

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the control group. The experimental group was divided into two subgroups: the experimental group and the experimental group. The control group was divided into two subgroups: the control group and the control group. The experimental group was divided into two subgroups: the experimental group and the experimental group.

1. A frequency shifting device comprising:

first means for providing a layer of optically refractive material having a moving refractive boundary responsive to an application of a traveling wave electrical signal and

second means for providing an electrical signal to said first means effective to effect a predetermined frequency shift of an optical signal passing therethrough.

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second means for providing an electrical signal to said first means effective to
5 effect a predetermined frequency shift of an optical signal passing therethrough.

2. The invention of Claim 1 wherein said device includes an active polymer layer and a first optically conductive cladding layer above.

3. The invention of Claim 2 wherein said device further includes a microstrip line disposed over said first cladding layer.

4. The invention of Claim 3 further including an optically conductive second cladding disposed beneath said active polymer layer.

5. The invention of Claim 4 further including a ground plane beneath the said second cladding layer.

6. The invention of Claim 5 further including a quartz or silicon substrate disposed beneath said ground plane.

7. A frequency shifting device comprising:
a substrate;
a ground plane disposed over said substrate;
an optically conductive second cladding layer disposed over said ground plane;
an active polymer disposed over said second cladding layer;
an optically conductive first cladding layer disposed over said active polymer,
a microstrip line disposed over said first cladding layer.
8. A continuous wave frequency converter comprising:
first and second frequency shifting devices disposed in first and second optical
paths respectively, each of said devices having a layer of optically refractive material
with a moving boundary responsive to the application of an electrical signal and
means for providing an electrical signal to said first and second devices.
9. A method for continuous wave frequency shifting of an optical signal
comprising the steps of:
providing layers of optically refractive material having a moving refractive
boundary responsive to an application of a traveling wave sinusoidal electrical signal and
providing electrical signals to said layers to effect a predetermined frequency shift
of an optical signal passing therethrough.